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A PLEA FOR A JUST ESTIMATE OF THE VALUE OF ELECTRO-THERAPEUTICS IN GYNÆCOLOGY.¹

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It was my intention in this paper to give a full resumé of the results obtained by electricity in pelvic affections, and to endeavor to draw a just deduction of the value attaching to this agent. But I found the literature of such vast proportion and my notes grew to such an extent that the time at my disposal to-night would cover only a small fraction of the ground. I have therefore to content myself with the presentation of some data, which in my opinion are fairly representative of both sides of the question, and to state my own results with as much impartiality as may be expected from one who claims to be neither an enthusiast nor an opponent of electro-therapeutics.

Fibro-Myomas of the Uterus. There the weight of evidence is decidedly in favor of the view that electricity ranks as a palliative measure only. But the vital question for solution is, to what extent does it fulfill this rôle without immediate danger to the patient and without lessening the chances of recovery from a subsequent surgical operation should this be found necessary. The first part of the question is easily decided, but the latter part will require careful and unbiased observation in the future on the part of all concerned. In determining a point of this nature the *post hoc ergo propter hoc* reasoning has certainly no place. Unfortunately this is a form of reasoning frequently adopted by the opponents of electricity. It is well known that fibroids are prone to undergo various degenerations and suppuration; and to form adhesions with surrounding tissues when left entirely to themselves. In analyzing three hundred and fifty-six cases of fibro-myomas, operated upon at his clinic, Dr. A. Martin² finds that thirty-three or over nine per cent. showed marked degenerative changes, and twenty cases or five and six-tenth per cent. had undergone suppuration. The percentage of adhesions is great as every operator knows. It is therefore manifestly unjust to attribute every case of degeneration, suppuration

¹Read before The New York Obstetrical Society, December 20, 1892.

²Deutsch. Med. Woch., 1892. No. 2.



or adhesion in cases that had been previously treated by electricity to the deleterious influence of the treatment. But as we will show later a greater injustice than this is occasionally perpetrated, as when a death undoubtedly caused by another agent is put down against Apostoli's method.

A. Martin and Mackenrodt (a) some months ago presented statistics on the results of Apostoli's method in the treatment of fibromyoma the most unfavorable of any published thus far by gynæcologists of note. The statistics they give deserve therefore the most careful consideration. They embrace sixty-six cases in all, divided up as follows :

(a). Thirty-six cases treated in Martin's clinic in accordance with Apostoli's rules.

(b). Sixteen cases treated elsewhere and operated upon afterward in the clinic.

(c). Fourteen cases treated elsewhere came for advice but not for operation.

The first group only is given in detail. Of these thirty-six cases in twenty (55.5 per cent.) with small myomas a relatively good result was obtained, or what the authors are willing to concede as a symptomatic cure; eight of these were permanently cured, and twelve had a return of their symptoms after a variable time.

The remaining sixteen cases (44.5 per cent.) were made worse by the treatment, and of these three died, according to the authors, as a result of it. I will give the reports of the three deaths in the author's own words.

Case I. Frau S. Æt. 50 years. Multiple myoma. Uterus, size of double fist. Profuse hemorrhages. Apparent improvement after eighteen *séances*. Then treated with hot douches and hydrastis during menstrual flow: three months later a relapse of the old symptoms. Rapid increase of anæmia. Patient lost so much blood after five *séances* of electricity that they had to do an *abrasio mucosa* which was followed by an intra-uterine injection of liquor ferri and tamponning of uterus to arrest hemorrhage. Apparent convalescence. On the twelfth day embolus of the arteria pulmonalis. Immediate death.

Case II. Frau E. Large tumor. After twenty-five *séances* a high degree of fever set in, softening the tumor, cœliotomy to remove the suppurating tumor. Patient died on the following day.

Case III. Frau G. After seventeen séances, fever, softening of the growth. Declined operation. Peritonitis. Death in three weeks.

Is any comment necessary on the first case? The death could not possibly have been due to the electrical treatment, but the probability that it was due to the intra-uterine injection of liquor ferri is very strong. It is strange that in the face of the numerous cases of reported death due to the intra-uterine injection of liquor ferri, (Chrobak alone has recently collected eighteen cases), we should find anyone resorting to it.

As the operation of coeliotomy *per se* for the removal of a uterine myoma is attended with a high mortality—A. Martin¹ in two hundred and thirty-one cases had sixty-four deaths or twenty-seven per cent.—the death in the second case cannot be solely attributed to the electrical treatment. It is a pity that this case and case III have not been reported more in detail so that we would be in a better position to judge their merits. Granting, however, that these two deaths were the direct result of the treatment, the authors have met with two deaths in sixty-six cases, or about three per cent. The thirty cases treated elsewhere and seen by them in consultation have no other statistical value for we have no knowledge of the cases they numerically represent that were benefitted. The paper fairly bristles with figures which are dexterously used to prove what the authors desire—the safety of operating after a new method based on nineteen cases. But as I am anxious to show the obverse side of electro-therapeutics in fibroids, even when painted by unfriendly hands, I have given the authors' version in almost their own words.

A careful analysis of the one hundred and six cases reported by T. Keith and S. Keith² gives the following figures:

Completely cured—total removal of tumor	-	-	-	4 cases
Symptomatically cured	-	-	-	60 "
Slightly improved	-	-	-	21 "
No improvement	-	-	-	11 "
Made worse	-	-	-	6 "
Deaths	-	-	-	1 "
Withdrew from treatment after a couple of applications	-	-	-	3 "

¹ Centb. für Gyn. 1890, p. 797.

² Electricity in the treatment of uterine tumors, 1889, Edinburgh.

T. Keith¹ reports later seven additional cases of small fibroids in five of which the tumor as well as the symptoms disappeared, and the other two were symptomatically cured. He states further that in some of his earlier cases when there was no improvement at first this showed itself later on and the patients were freed from their troubles.

The value of the work done by the two Keiths in this direction cannot be overestimated, for one cannot rise from a study of their report without a feeling that it was their wish to paint a true picture without any embellishments.

Dr. GEORGE GAUTIER² reports sixty-seven cases of fibroids; of these sixty-two were symptomatically cured, four were failures, and one resulted in death from an unrecognized disease of the adnexa.

Dr. ENGELMANN,³ of Kreuznach, treated twenty-one cases with the following results:

Symptomatic cure in sixteen cases.

No improvement in five cases.

R. SCHAEFFER⁴ reports forty cases with twenty-one symptomatic cures, slight improvement in three and no results in five. Five were made worse, and six withdrew from treatment too soon to enable the author to form an opinion.

BRÖSE⁵ relates thirty-five cases. There was a symptomatic cure in twenty-one, no results in two, and in one case a pyosalpinx developed in a tube already affected. This was successfully removed by coeliotomy. The cases recorded as cured were observed for two or three years afterward and no return of the symptoms has occurred.

NAGEL⁶ treated twenty-four cases and obtained symptomatic cures in fourteen cases.

The results published by Dr. J. Homans,⁷ of Boston, are usually quoted by opponents as adverse to Apostoli's method. Dr. Homans himself is inclined to look upon them in that light. But I must confess that a careful reading of the paper on two different occasions has caused me surprise that the results obtained were so

¹ British Medical Journal, February 14th, 1891.

² Centb. für Gyn, 1890, No. 19.

³ Edinburgh Med. Jour., Nov., 1891.

⁴ Zeitscht. für. Geb. u. Gyn. Bd XXII.

⁵ Zeitscht. für. Geb. u. Gyn. Bd XXII, p. 270-276.

⁶ Zeitscht. für Geb. u. Gyn. Bd XXII, p. 280-287.

⁷ Boston Med. Jour., 1891, p. 246-280.

good in so large a proportion of the cases, and in a few they were more brilliant than they are portrayed even by many enthusiasts. Thirty-five cases are reported, of these six cases, (Cases VI, XII, XVII, XXVIII, XXIX, XXX), had received only two applications. One case (Case XXIII) was given four negative punctures to the depth of three-and-a-quarter, three-and-a-quarter, one-and-three-quarters and two inches. Dosage of electricity ranged from seven to thirty-five milliamperes.

Another case (Case II) was given two negative punctures to the depth of one half inch, dosage from 40 to 50 ma. Four cases (Cases XX, XXI, XXIV, XXVIII) had only six applications. One case (XXXI) received only five applications. Thirteen cases therefore were not treated for a sufficient length of time. One of these cases in which punctures were made to the depth of three-and-one-quarter inches was treated in direct opposition to Apostoli's teachings, which state that the puncturing needle should not be inserted for a greater depth than two-fifths of an inch. In spite of all these circumstances sixteen patients were symptomatically cured; three were considerably improved, five were slightly improved, five were not in the least benefitted, one was made worse, and one died from septicaemia in four weeks as a result, the author thinks, of the treatment. A death from septicaemia when the application is intra-uterine, as it was in this case, ought not to occur if strict antiseptic precautions are carried out. The operators (not Dr. Homans but two assistants) frequently employed the carbon electrode, which owing to its absorptive qualities, requires the greatest care to keep clean. They should be boiled for an hour at least each time after being used. Whether this was done is not stated.

Apart from this unfortunate occurrence the results are extremely good considering that many of the tumors were very large, reaching to the umbilicus. Dr. Homans received replies from several of the patients two and three years after they had been treated. A very large proportion of these stated that they enjoyed fair health and were free from symptoms.

My own experience extends over ten cases of fibroids, in which I followed Apostoli's method closely. I used a large clay electrode on the abdomen, and within the uterus a platinum or a carbon electrode, the latter when I wished to do sectional cauterization. The galvanometer I employ is one I obtained from Gaiffe in Paris, and it has given me good satisfaction. The strength of current

varied from seventy-five ma. to two hundred ma. but in the majority of instances ranged from one hundred and twenty-five to one hundred and fifty ma. The séances were usually of five minutes duration, and were repeated from two to three times a week. When it was at all feasible I availed myself of the use of a bivalve speculum, passing the uterine electrode, with the aid of the sight, and by seizing the anterior lip of the cervix with a volsellum.

This course I consider has several advantages in the matter of cleanliness and asepticism. In seven of my cases a symptomatic cure was obtained. In one the treatment seemed to hasten the extrusion of two moderately-sized submucous growths which I removed surgically without any difficulty. From this on the profuse hemorrhages ceased. But as the polypi were not detected until three months after the treatment had been discontinued, the patient not having been examined in the meantime, it is a matter of reasonable doubt whether their expulsion can be laid to the credit of the treatment. Different observers make different claims for galvanism regarding its value in this direction. Thus La Torre extolls it highly for its efficacy in hastening the extrusion of submucous growths, and reports eight cases supporting his view. Bröse, on the other hand, denies that it possesses any such virtue and considers it contra-indicated when the fibroid is of the sub-mucous variety. One of my successful cases is of special interest in that it opens up the question of the availability of electricity as a therapeutic measure in cases with organic disease of the heart of so severe a nature as to entirely exclude any surgical interference.

The patient, Mrs. E., was kindly referred to me for treatment, February 11th, 1891, by Dr. L. Conrad. She was fifty-one years of age and had multiple fibroids filling the pelvis and reaching to within an inch of the umbilicus. Four years before she had passed through a serious attack of typhoid which left her with a damaged heart. For the past twelve months she had several attacks of angina and cardiac asthma. A physical examination revealed a double aortic and mitral murmur. The menstrual flow for some years already had been quite profuse, but for the past year or so it had increased very much in amount and in duration, lasting from twelve to fourteen days. In consequence of this she had to keep to her bed half the time and would scarcely recover from one hemorrhage when another would set in. Ergot had been given for a long time without any effect. She had considerable pressure-symptoms such as weight in the abdomen and

inability to stand for any length of time. She was a very stout person and could not lie on her back without bringing on an attack of asthma. At the first application I placed her on the table in as comfortable a position as possible, with head well elevated. I had scarcely begun to turn on the current through the means of the water rheostat when I noticed that she began to cough, gasp for breath, her whole face suddenly turning to a deep purple color. I immediately turned off the current, removed the electrodes, sat her up on the table and applied such restoratives as I happened to have at hand. After a half hour's anxious time the alarming symptoms subsided and the patient felt as usual save some fatigue in consequence of the attack. As she felt convinced the attack was due to the constrained position and not to the electrical current, an opinion which I shared, I made an application of the current two days later. This time I placed the patient on my massage couch and in a semi-sitting posture. I turned on the current slowly, stopping first at fifty ma. then at seventy-five ma. and finally reaching one hundred ma. which I applied for five minutes. She endured the application well, though toward the end of it her face began to grow red and she complained of a sensation of heat mounting upward. From the end of February until May 5th she received nine more applications (dosage varying from sixty to one hundred and forty ma.) all of which she bore remarkably well. There was an improvement of all the symptoms excepting the hemorrhage.

After the fourth treatment, the menstrual flow became normal in amount and in duration a few months later and continued so when I last saw the patient last August. She was then feeling very much better in every respect and could walk and stand with ease. She died suddenly about a month ago in an attack of angina.

Here was a case in which surgical interference was entirely out of the question and in which ergot had failed to give any relief. The only treatment available therefore was galvanism, ten applications of which made her comfortable, checking the menorrhagia and relieving the pressure symptoms for the remainder of her life. From my experience in this case and from two others I have become impressed with the necessity of watching the face closely when applying currents of high intensity in patients with organic disease of the heart. When the face begins to grow red and the lips to change color then the current should, at once, be gradually turned off. If further experience confirm the safety of high-dosage galvanism in

serious cardiac troubles, Apostoli's method will have an undisputed field in this class of cases. This field is a fairly large one as shown by recent researches. Hofmeier was the first to draw attention to the frequency of degeneration of the muscles of the heart as a complication of uterine fibroids. In a paper entitled "Die Operative Behandlung der Uterus Myome" in the "Archiv für Gynäkologie" Band 38, Heft I, 1890, G. Leopold states that of one hundred and forty cases coming under his observation twenty-six or over eighteen per cent. had serious cardiac complications which would render any surgical interference extremely hazardous. One of his patients on whom he did a castration died a few hours after the operation as a result of the cardiac lesion. In deciding as to what treatment to adopt in any given case Leopold makes it a point of vital importance to ascertain the condition of the heart and believes that degeneration of the heart muscles has frequently been the cause of death in many of the fatal cases that have been subjected to surgical procedures.

I have arranged in tabular form the results obtained in three hundred and seventy-two cases of fibroids collected as follows:

	No of cases.	Complete cure.	Symptomatic cure.	Much improved.	Slightly improved.	No improvement.	Made worse.	Deaths
Martin & Mackenrodt.....	36	....	20	....	....	14	....	2
T. & S. Keith.....	103	4	60	....	21	11	6	1
George Gautier.....	67	....	62	....	....	4	....	1
T. Keith.....	7	5	2	....	....	....	....	....
Dr. Engelmann, Kreuznach.....	21	....	16	....	....	5	....	....
R. Schaffer.....	34	....	21	....	3	5	5	....
Bröse.....	35	....	21	....	11	2	1	....
Nagel.....	24	....	14	....	....	10	....	....
J. Homans.....	35	....	16	3	5	9	1	1
H. N. Vineberg.....	10	....	7	....	....	3	....	....
Total.....	372	9	239	3	40	63	13	5

They who have followed up the literature of the subject will know that this table is made up in part from those who are unfriendly to Apostoli's method and in part from those who must be considered as unbiassed observers. And yet it gives us sixty-four per cent. of symptomatic cures, two and a half per cent. of complete cures and only one and one-third per cent. of deaths.

In cases of dysmenorrhœa apparently due to a stenosis or some structural changes at the internal os galvanism has proved of the greatest value in my hands and in those of others. From four to six applications of a current, strength from twenty-five to thirty ma., with the

negative electrode passed just beyond the internal os are usually sufficient to give complete relief. As to the permanency of this relief I have no data of my own to present nor have I been able to find any in literature. Some of my cases have been treated from three to twelve months ago and they still are free from their dysmenorrhœa.

One patient had first been subjected by Dr. Buckmaster and myself to a very thorough dilatation and curetting under ether, the uterus afterward being drained by a gauze tampon. For the next two periods she was entirely free from pain, though prior to that she had suffered so much pain as to prevent her from going about for the first two or three days. At the third menstrual flow after the operation she had a great deal of pain during the first day, and at the fourth period her pains were about as bad as they ever were. This, by the way, is the usual experience after dilatation and *curettage*.

I then made four applications of negative electricity (dosage from twenty-five to thirty ma.) passing the electrode just to the internal os twice, and beyond the internal os at the other two séances. The next menstrual flow was perfectly painless, the patient not knowing that the flow had set in until she saw the blood stains on her clothes. She had two more applications at intervals of a week before the expected next period which was free from pain—as every period, now to the number of four, has been since.

In *endometritis* not dependent upon gonorrhœa or disease of the adnexa or displacements and adhesions of the uterus, electricity takes high rank with other well-known therapeutic measures. The dosage I employ varies from thirty to fifty ma., and the uterine electrode is usually made negative.

I am well aware that at the present time, in this city, the vogue is to dilate, curette, and pack with iodoform-gauze. This, no doubt, is a valuable procedure, but, in my hands, at least, is not always attended with the desired effect. Some of my patients have returned a few months afterward saying that the discharge had recurred and was almost as profuse as before the operation. I don't think this result was due to any fault of mine, for I always dilated very thoroughly so that I could pass a Polk's cervical speculum with ease, was careful to curette every portion of the endometrium, and had no more difficulty than most of my colleagues in introducing the iodoform-gauze. In fact latterly I have had no difficulty at all in doing this with Sim's tampon screw.

Electricity has all the advantages of this method and possesses

some additional ones. It dilates the cervical canal, thus favoring drainage, and it cauterizes superficially the endometrium. But it also effects the circulation of the uterus and its surrounding tissues which a mere curettage does not. I have often had ocular demonstration of the effect electricity has on the uterine circulation. When a negative electrode is inserted into the uterine canal and a current strength of from thirty to fifty ma. is applied, the portio vaginalis will be seen to undergo distinct changes of color. At first it becomes reddish, after a short time the color deepens, and in about two minutes it loses its color and grows quite white and bloodless, remaining thus until the end of the séance. I have not seen any mention of this phenomenon in literature and would be interested to learn if others have observed it.

In *endometritis hæmorrhagica* electricity must take its place with curettage and packing. I have had some cases in which the curette failed and electricity afterward succeeded, and *vice-versâ*. This apparently paradoxical experience frequently finds its parallel in the domain of general therapeutics. We cannot, as yet, tell why arsenic will act, as if by magic, in some cases of neuralgia and miserably fail in others.

In the *Amenorrhœa* of relatively young married women in whom a premature climacteric might be suspected galvanism has been of service in my hands. Most authors employ the faradic current in this affection using a bipolar uterine electrode.

In inflammatory pelvic exudates which have passed the acute stage, galvanism applied through the vaginal vault and abdomen is a safe and exceedingly efficacious remedy.

I have never used galvano-puncture in these cases. During the Winter of 1890-1891, through the kindness of Dr. Wallach, I treated a number of cases at Mt. Sinai Dispensary. The results were almost invariably good. The patients were always relieved of pain and could walk with greater comfort and ease. In some the exudate disappeared after a longer or shorter period, in others again the local condition would show but little change while the improvement in the symptoms was marked. This corresponds with the experience of Theilhaber,¹ Bröse and others.

In accumulations of pus in the pelvis and in pyosalpinx I agree with Burrage² that "it is bad surgery to resort to galvano-puncture"

¹ Münch. Med. Woch., 1892. 21 and 23.

² Boston Medical and Surgical Journal, 1892, p. 600-603.

or electricity in any form. These cases demand surgical interference. In uterine displacements with adhesions and in fixations of tubes and ovaries electricity cannot accomplish much. In these conditions I always employ pelvic massage, if they resist the routine treatment of hot douches, iodine, boroglyceride and ichthyol tampons.

The treatment of ectopic gestation by electricity has so frequently been discussed in this society that I desist from saying anything upon this topic.

I think that at the present time the following conclusions are justifiable:

(1.) Apostoli's method is a valuable palliative in uterine fibromyoma, though not entirely free from danger.

(2.) It forms a formidable rival to castration, being almost as efficacious, and not attended with anything like the same mortality.

(3.) In small myomas Apostoli's method is often attended with complete cure. Hence the importance of subjecting patients early to the treatment, before the growth has had time to reach large dimensions.

(4.) In those cases of uterine myomas complicated with serious cardiac disease, and in which any surgical procedure is attended with great risk to life, electricity forms a safe and efficacious therapeutic resource.

(5.) In certain forms of dysmenorrhœa, amenorrhœa and endometritis and in chronic inflammatory exudates electricity takes high rank with other well-known therapeutic measures.